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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/585,437

07/06/2007

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011235.57998US

4416

23911 7590 08/20/2010
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EXAMINER

EDGAR, RICHARD A

ART UNIT

PAPER NUMBER

3745

MAIL DATE

DELIVERY MODE

08/20/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,437	Applicant(s) ANDREES ET AL.	
	Examiner Richard Edgar	Art Unit 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2006 under 35 USC 371.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 12-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/7/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 12-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949).

In the present instance, claims 12 and 19 each recites the broad recitation “turbo machine,” and the claim also recites “in particular for a gas turbine” which is the narrower statement of the range/limitation.

Similarly, claim 22 recites the broad recitation “machined” and the claim also recites “in particular by milling” which is the narrower statement of the range/limitation.

Claims 12 and 19 also require fibers “exhibiting tensile strength.” It is unclear how this limitation further limits a fiber, which inherently has some tensile strength.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12-14, 16-17, 19-31 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,941,688 (Dambrine hereinafter).

For claim 23 Dambrine teaches a rotor for a turbo machine, comprising: a rotor base body 3, wherein the rotor base body is formed of an MMC composite material (see col. 3, lines 35-38) and wherein the rotor base body 3 defines, in a radial internal section of the rotor base body, a recess which is filled with reinforcing fibers 15; and a rotor blade 5 formed in a radial external section of the rotor base body 3.

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For claim 24 Dambrine teaches the recess does not contact the rotor blade (see col. 3, lines 52-55).

For claim 25 Dambrine teaches a radial external end of the recess is located at a distance from the radial external section of the rotor base body 3 (see col. 3, lines 52-55).

For claim 26 Dambrine teaches the filled recess forms an MMC ring 15.

For claim 27 Dambrine teaches the fibers are silicon carbide fibers (see col. 3, lines 38-40).

For claim 12 Dambrine teaches a rotor for a gas turbine, comprising a rotor base body 3 and several rotor blades 5 arranged over a circumference 4 of the rotor base body 3, wherein the rotor base body is manufactured of an MMC composite material (see col. 3, lines 35-38), and wherein the rotor blades 5 are an integral part of the rotor (see blank 25), and further wherein the rotor base body 3 is configured in a shape of a ring and the ring-shaped rotor base body comprises, in a radially internal section, at least one groove-like recess which is filled radially on an inside with fibers 15 exhibiting tensile strength.

For claim 13 Dambrine teaches several recesses filled with fibers 15 are arranged successively in a row in an axial direction of the rotor base body 3 (see col. 5, line 37-41).

For claim 14 Dambrine teaches the recess, starting from a radially internal generated surface of the rotor base body 3, extends radially into the radially internal

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section of the rotor base body and ends at a distance from a radially external section 4 of the rotor base body, wherein the external section forms the rotor blades 5.

For claim 16 Dambrine teaches the recess has a greater dimension in a radial direction than in an axial direction (see “H” versus “L”).

For claim 17 Dambrine teaches the recess is limited on a radially internal end by at least one cylindrical shell (see blank 25) of matrix material (see col. 3, line 66-67).

For claim 28 Dambrine teaches a method for manufacturing an integrally bladed rotor for a turbo machine, comprising the steps of: forming a groove in a radial internal section 3 of a rotor base body formed of an MMC composite material; filling the recess with reinforcing fibers 15; compressing the rotor base body and the filled recess by applying pressure at a high temperature (see col. 4, lines 17-26); and forming a blade 5 in a radial external section of the rotor base body (see col. 4, lines 27-28).

For claim 29 Dambrine teaches the recess does not contact the rotor blade 5 (see col. 3, lines 52-55).

For claim 30 Dambrine teaches a radial external end of the recess is located at a distance from the radial external section 4 of the rotor base body 3 (see col. 3, lines 52-55).

For claim 31 Dambrine teaches the fibers are silicon carbide fibers (see col. 3, lines 38-40).

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For claim 19 Dambrine teaches a method for the manufacture of an integrally bladed rotor for a turbo machine, in particular for a gas turbine, comprising the steps of: a) providing a ring-shaped rotor base body 3 of metal matrix material with a radially internal section and with a radially external section, wherein the radially external section forms rotor blades 5; b) applying at least one groove-like recess in the radially internal section of the rotor base body, in which case the recess is open on one radially internal end and ends at a distance from the radially external section (see FIG. 1); c) filling the groove-like recess, from a radially internal direction, with fibers 15 exhibiting tensile strength; and d) compressing the rotor base body of metal matrix material and of the fibers exhibiting tensile strength by applying pressure at a high temperature (see steps (e) and (f) in col. 4).

For claim 20 Dambrine teaches after filling the recess with fibers 15 exhibiting tensile strength, the recess is closed in a gas-tight manner on the radially internal end by at least one cylindrical shell 25 of matrix material (col. 3, step (a) by applying a vacuum (col. 4, step (e)).

For claim 21 Dambrine teaches the step of compressing is performed by hot isostatic pressing (step (f) in col. 4).

For claim 22 Dambrine teaches following the compressing step, the rotor blades 5 are machined, in particular by milling, in a region of a radially external fiber-free section (step (g) in col. 4).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dambrine as applied to claim 12 above, and further in view of United States Patent No. 3,787,141 (Walsh hereinafter).

Dambrine appear to show a rectangular groove or recess and not a rounded end.

Walsh teaches an annular cavity 24 of a turbine disk being filled with a composite ring 26 made from filament embedded within a matrix material, whereby the cavity and cooperating composite ring have a rounded profile as seen in FIG. 1 for the purpose of

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mitigating inflection points in the recess exposed to high circumferential and radial loads.

Because Dambrine does not detail the geometry of the reinforcement ring 15, and Walsh teaches a specific embodiment where the profile of the reinforcement composite ring has an arcuate profile for preventing stress concentrations, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the shape of Dambrine to be rounded as taught by Walsh for the purpose of preventing stress concentrations in the compressor rotor.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dambrine as applied to claim 12 above, and further in view of United States Patent No. 4,867,644 (Wright et al. hereinafter).

Dambrine appear to show a rectangular groove or recess and not a tapered recess.

Wright et al. teach a tapered reinforced composite ring 44 in the rotor (FIG. 8-9) for the purpose of increasing the strength of the rotor.

Since Dambrine uses a reinforcement ring 15 to strengthen the rotor, and Wright et al. teach to use a tapered reinforcing ring to further strengthen a rotor, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the apparent rectangular recess of Dambrine to be tapered as taught by Wright et al. for the purpose of further strengthening the rotor.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Richard Edgar whose telephone number is (571) 272-4816. The examiner can normally be reached on Monday thru Friday, 7 am- 5 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Richard Edgar/
Primary Examiner, Art Unit 3745